

[Document's Name] Scope of the Claim for Patent

[Claim 1]

A lens exchange type image pickup apparatus having an image processing apparatus of displaying an image of an object picked up by an image sensor and a scale indicative of a reference length in juxtaposition on an image screen of a display, in which

an image pickup lens mounted to an image pickup apparatus main body has optical magnification outputting means for outputting a predetermined optical magnification, and

the image processing apparatus includes an actual magnification calculation means for calculating an actual magnification on the screen of a display based on the optical magnification, the size for the image sensor, and the size of the image screen, and scale setting means for setting a scale based on the calculated actual magnification and the reference length of the scale to be displayed.

[Claim 2]

An image pickup apparatus according to claim 1, wherein the optical magnification outputting means has a memory device for storing a previously measured optical magnification.

[Claim 3]

An image pickup apparatus according to claim 1, wherein the image pickup lens, in a case where it is a zoom lens having a magnification adjusting movable lens, has a position sensor for detecting the position of the movable lens or the position of a movable portion corresponding thereto, and the optical magnification outputting means has a memory device for storing a position-magnification conversion data for outputting an optical magnification in accordance with the detection position of the position sensor based on the previously measured optical magnification.

[Claim 4]

An image pickup lens mounted detachably to an image pickup apparatus main body having an image sensor, and including optical magnification outputting means for outputting a previously measured optical magnification.

[Claim 5]

An image pickup lens according to Claim 4, wherein the optical magnification outputting means has a memory device for storing a previously measured optical magnification.

[Claim 6]

An image pickup lens according to Claim 4, having a magnification adjusting movable lens for changing the optical magnification and a position sensor for detecting a position of the movable lens or a position of a movable portion corresponding thereto, in which the optical magnification outputting means has a memory device for storing a position-magnification conversion data for outputting an optical magnification in accordance with the detection position of the position sensor based on the previously measured optical magnification.

[Claim 7]

An image pickup apparatus having an image processing apparatus intended for displaying an image of an object picked up by an image sensor through a magnification controllable image pickup lens and a scale indicative of a reference length in juxtaposition on a display of a predetermined screen size, in which

the image pickup lens has a position sensor for detecting a position of a magnification adjusting movable lens or a position of a movable portion corresponding thereto, and a microcomputer for outputting an optical magnification and a nominal magnification corresponding to the detection position of the position sensor based on the predetermined position-magnification conversion table, and

the image processing apparatus has a scale setter for setting the scale based on an actual magnification and a reference length of the scale to be indicated.

[Claim 8]

An image pickup lens mounted to an image pickup apparatus main body intended to display image of an object picked up by an image sensor and a scale indicative of a reference length in juxtaposition on a display of a predetermined screen size, including

a zoom ring for operating the magnification adjusting movable lens, a click mechanism to stop at a position for the scale marking number of a nominal magnification corresponding to an actual magnification attached to a zoom indicator, a position sensor for detecting a position of a magnification adjusting movable lens or a portion of a movable position corresponding thereto, and a microcomputer for outputting an optical magnification and a nominal magnification corresponding to the detection position of the position sensor based on the previously set position-magnification conversion table, in which

a nominal magnification data corresponding to a scale marking value indicated to the zoom indicator is outputted in a case where the detection position outputted from the position sensor is within a predetermined range of error

previously set around the click position stopped at the click mechanism as a center.

[Claim 9]

An image pickup lens according to Claim 8, wherein an optical magnification data corresponding to a position data set as a click position is outputted in a case where a detection position outputted from the position sensor is within a predetermined range of error previously set around the click position stopped by the click mechanism as a center.

[Claim 10]

A method of writing data of writing an optical magnification corresponding to a detection position by a position sensor to an image pickup lens having a position sensor for detecting a position of a magnification adjusting movable lens or a position of a movable portion corresponding thereto and a microcomputer having a data memory for storing an optical magnification corresponding to the detection position of the position sensor and a program memory for storing a program conducting reading and writing of data, characterized by;

A: storing a position data outputting program only for outputting the position data of a magnification adjusting movable lens detected by the position sensor in a program

memory and outputting the position data successively upon measurement of the optical magnification,

B: overwriting a read/write program having data writing means for writing a relation between a measured optical magnification and a position data to a data memory in the microcomputer, and data confirming means for outputting an optical magnification data corresponding to the position data detected by the position sensor on the program memory thereby storing a position-optical magnification conversion data in the data memory, and then

C: overwriting a read only program having data outputting means for outputting an optical magnification data corresponding to the position data detected by the position sensor and not having writing means of writing data to the data memory on the program memory.